

Serial No. 10/614,811  
Reply to the Office Action dated May 13, 2005

**REMARKS**

Claims 3-14 remain active in the case. Reconsideration is respectfully requested.

The present invention relates to a hair dye composition.

**Amendments to Specification**

Tables 1, 3 and 4 have been amended to correct a spelling error therein. Entry of the amended tables is respectfully requested.

**Invention**

The present invention is directed to a method of dyeing the hair by mixing a first pack formulation and a second pack formulation and applying the mixture to the hair, wherein the first pack formulation is comprised of the following ingredients (A) to (D):

(A) ammonia or an ammonium salt	0.1 to 1 mol/kg,
(B) a carbonate with the proviso that said carbonate is other than an ammonium salt,	0.001 to 1 mol/kg,

(C) a water soluble salt of iron, 0.1 to 10,000 ppm,

(D) a chelating agent, in which the molar ratio of (A) to (B) ranges from 0.1 to 5 and the pH of the formulation ranges from 8.5 to 12, and wherein the second pack is comprised of an acidic hydrogen peroxide solution as an oxidizing agent. The applied mixed formulation dyes the hair, and then the applied mixed formulation is removed from the hair.

Prior Art Rejection

Claims 3-14 stand rejected based on 35 USC 103(a) as obvious over Massoni, U.S. Patent 6,187,058 in view of Chan et al, U. S. Patent 5,368,610. This ground of rejection is respectfully traversed.

The Massoni patent discloses a method of dyeing the hair by the use of a two pack formulation in which one formulation is a developer phase that is an aqueous solution of an oxidizing agent such as hydrogen peroxide. This phase corresponds to the second pack component of the hair dye formulation employed in the present method which is also an acidic aqueous hydrogen peroxide solution. The other component of the two phase composition of the patent is a tint phase that is comprised of a variety of components including an alkalizer. This phase corresponds to the first pack component of the hair dye formulation employed in the present method.

The Examiner discusses the method employed by the Massoni patent to dye the hair using a two-pack formulation which is mixed at the time of application of the dye composition

to the hair, and the dye formulation that is employed which contains chelating agents, an alkaliizer to control the pH of the dye pack formulation which may be a carbonate, quaternary ammonium salts and an oxidizing agent. Importantly, the Examiner acknowledges that the reference does not describe a composition that contains an iron salt. However, this lack of disclosure resides at the critical difference between the claimed method of the present invention and that of the reference since, as described on page 2 of the specification, transition metals have been employed in dye formulations in order to accelerate the action of the oxidizing agent and to heighten the bleaching power or dyeing power of the dye formulation that is used. Thus, the ferrous salt is an important component of the dye formulation that is used in the method of the invention. Further, by way of the comparative evidence now submitted into the record of the application by way of the accompanying Declaration, 37 CFR 1.132, it is clear that there is a significant interaction between the carbonate component of the dye composition and the iron salt. A comparison of the property data of Example 1 (invention) and Comp. Example A (Table A) demonstrates that the dye formulation of Ex 1 exhibits superior dyeability, color retention and lightness characteristics in comparison to the carbonate lacking formulation of Comp Ex A. Thus, on the basis that the present dye formulation must contain both an iron salt and a carbonate that is not an ammonium carbonate, the dye formulation that is used in the method of the present invention is believed to be patentably distinct from the Massoni patent.

Applicants also point out that the chelating agent component (D) of the first pack formulation of the invention interacts with the iron salt component as described in the present specification at page 5. Although Massoni describes the presence of a chelating agent as a

possible component of the tint phase of the composition of the reference at column 4, line 48, the reference does not suggest any interaction with a metal such as iron because no such metal additive is disclosed in the reference. Thus, clearly, the function of the chelating agent in the composition of Massoni is not the same as the function of the chelating agent in the dye formulation employed in the present method.

Another point of clear distinction between the reference and the first pack formulation of the invention is that the patent describes the use of virtually any known alkali that is used in hair treatment technology to adjust the pH of the tint phase to maintain the pH of the combined tint phase and developer phase within the required range of 6-12. Therefore, the disclosed pH range of 6-12 should not be compared with the claimed pH range of 8.5-12 of the present method. Sodium and potassium carbonates are described among other types of alkalis as suitable bases. The alkalis taught in column 4, lines 21-34 of the patent are the only pH changing agents taught in the reference. On the other hand, a key feature of the composition employed in the present method is that the first pack contains, specifically a carbonate base in the stated amount and ammonia or an ammonium salt such as described at the top of page 4 of the present text, also in a specified amount. It is important that the molar ratio of the ammonia or ammonium salt ingredient (A) to the carbonate (B) range from 0.1 to 5. The two components (A) and (B) are required in stated amounts for the purposes of reducing the irritating odor of the first pack, enhancing the bleaching power of the hair dye formulation and reducing irritation to the scalp. **The concept of employing only a carbonate compound with only ammonia or an ammonium salt to achieve specific property advantages is completely lacking in Massoni.**

Massoni only teaches the use of the alkalinizers to adjust the pH of the tint phase! (In the formulation that is used in the present method, if necessary, an additional alkali agent is added to the components of the first pack to adjust the final pH of the first pack to within the range of 8.5 to 12 as taught on page 6 of the specification.)

The Massoni patent at column 4, lines 35 *et seq* also discloses the use of quaternary ammonium salts in the tint phase. However, the quaternary ammonium salts of the reference, do **not** have similar physical properties to the ammonium salts of component (A) of the first pack of the hair treatment formulation used in the method of the present invention. The quaternary ammonium salts of the reference are  $R_4N^+$  salts, wherein at least one of the R groups is a long chain fatty hydrocarbon residue. Such compounds are only and specifically used as hair conditioning agents, and are **not** used to adjust the pH of the composition of the reference. Thus, the quaternary ammonium salts of the patent are not the same as or equivalent to the ammonium salts of component (A) of the first pack of the present composition. Contrary to the Examiner's position, the quaternary ammonium salts disclosed in the patent can **not** be used as an embodiment of component (A) with the expectation of achieving the property objectives which the combination of components (A) and (B) achieve in the first pack of the composition used in the present method. Clearly, Massoni fails to suggest the claimed method of the present invention.

The deficiencies of the Massoni document are neither overcome nor improved upon by Chan et al. In fact, the oxidative hair dye formulation embodiments disclosed in the Chan et al patent are of a fundamentally different type than the two phase formulation of the Massoni

patent. The oxidative hair dye formulation of Chan et al is not of the type that uses hydrogen peroxide as the oxidizing agent as described in Massoni. Rather, the oxidizing mixture in Chan et al is an alkali metal chlorite salt that is combined with a Cu, Fe, Mn or Co salt. This oxidizing agent is used in combination with an oxidizing dye. Moreover, even if one of skill in the art were led to add an iron salt as taught by Chan et al into the composition of Massoni, without a specific carbonate salt being present, the results of the present invention are not achieved.

Chan et al describes several means of using the hair dye formulation described therein for the treatment of hair. One procedure, as described in Example 1, requires the initial treatment of the hair with a salt solution described in Table 2 of the patent. After rinsing of the hair, the hair is then treated with a dye composition as described in the first table of the example which contains the chlorite oxidizing agent. This method clearly is not the method of the present invention.

A second method of hair treatment is described in which the hair, as before, is initially treated with a metal salt solution or a chelating agent, but is also treated with an oxidative dye precursor, followed by treatment of the hair with the chlorite oxidizing agent. This procedure is described in Example 15 and similar procedures in Examples 16 and 17. This method is also not the method of the present invention.

Examples 2-6, 9-14 and 22 of the patent describe the aspect of the invention in which all of the components of the hair dye formulation described are applied to the hair in a single composition. This is the basis for applicants' previous comment that the reference discloses a single hair treatment formulation. However, it is also clear that the reference teaches the

treatment (dyeing) of hair in successive stages with separate components of the hair treatment formulation.

Yet another possible treatment method involves first treating the hair with dye precursors to achieve penetration of the hair with the dye ingredients, followed by application of the chlorite oxidant and the desired metal salt and chelating agent.

In view of the clear differences between the hair dye formulations of the two patents, one of which employs a metal salt-chlorite (oxidizing agent) combination, while the other requires a hydrogen peroxide oxidizing agent, it is not seen how the two references can be combined to suggest the present hair treatment formulation which also requires a hydrogen peroxide oxidizing agent.

Another critical factor is that neither reference anywhere teaches or suggests a very important feature of the composition employed in the present process that is the combination of specific relative amounts of carbonate compound and ammonia or ammonium salt in the phase which contains the oxidative dye components. There is no disclosure in the Chan et al patent of the necessity of using a carbonate compound in the formulation of an oxidation dye component, and certainly no teaching or suggestion of a combination of ammonia or an ammonium salt with a carbonate compound within specific relative amount limits in such a component. The same is true with respect to the Massoni patent which, as noted above, only teaches that a carbonate compound is only one of a variety of types of bases that can be used as a pH adjusting agent in which case ammonia is equivalent as a pH adjusting agent to the alkali metal carbonate compounds disclosed in the patent. Moreover, as is clear from the comments

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above, the quaternary ammonium salts disclosed in Massoni are not equivalent to the (non-quaternary) ammonium salts disclosed in Massoni, since they do not adjust the pH of the tint phase of the reference, but rather function as hair conditioning agents in the two pack formulation disclosed in the patent. How, therefore, is the composition employed in the presently claimed method obvious over the combined patents, if a combination of the two patents can be adequately made. Withdrawal of the obviousness ground of rejection is respectfully requested.

It is believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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